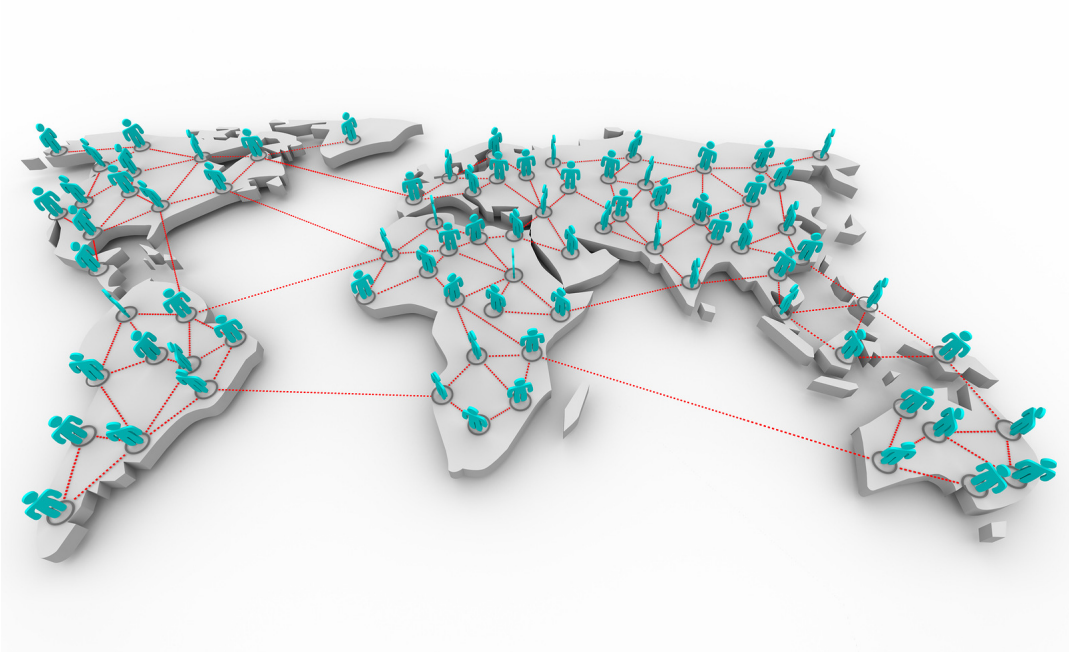
ONA surveys

NETDRAW - BASIC

A Practical Guide to Visualising Social Networks



ONA Surveys

Version 1.0 – June 2009

INTRODUCTION

This guide provides a brief introduction to the basic functionality of Netdraw. Netdraw is arguably the best free network visualization package on the market, and with a little bit of practice it will do remarkable things. This guide was written based on Netdraw version 2.083.

Netdraw can be downloaded from http://www.analytictech.com/downloadnd.htm

When used in combination with ONA Surveys (www.onasurveys.com) collecting and visualizing data is very easy. Here we assume that you have collected all your data and that you have a *.vna file available.

Other guides

We have also produced series of other guides:

- Advanced Guide to Netdraw (requires separate subscription)
- Introduction to ONA Surveys and User Manual
- Powerful Hints and Tips for Analysing Organisational Networks (requires separate subscription)

Disclaimer

ONA Surveys is owned by Optimice Pty Ltd. Neither ONA Surveys nor Optimice Pty Ltd is associated with Analytictech or Netdraw. This guide has been written in our capacity as practitioners using the tool intensively. In our experience the tool is mostly reliable, but will every now and then it will either crash or otherwise not perform as expected. In this case our recommendation is to close the program and start again.

Feedback and Contact

If you have any questions, suggestions or other feedback please email us at contact@onasurveys.com.

BASIC NETDRAW FUNCTIONALITY

Terminology

In terms of terminology we are assuming that your first Organisational Network Analysis project is likely to involve the mapping of people relationships. However, nothing would prevent you from mapping relationships between companies, countries or anything else. The technical term we use for either a person, company, country etc is a "**node**".

Each node in the network has a set of "**attributes"**. For instance, for a person it could be name, age, location, discipline etc. For a company it would be market share, industry, geography etc.

Nodes are connected through some kind of a relationship, and you will typically have assigned a strength value to that relationship. Relationships are technically called "**ties"**, and the strength of a tie is called "**tie strength"**. The tie strength could just be a "1", but could also have a range from e.g. "1" (weak tie) to "5" (stronger tie). There is no upper limit. The tie strength could even be negative.

Arrows between nodes are called **"Degrees",** and can also denote the direction. In this case the arrows are referred to as either "**Indegrees**" or "**Outdegrees".** An **i**ndegree refers to the amount of nominations, or relationships going into a node, whereas outdegrees are the relationships leading out from that node and into another.

Whilst this terminology is important when using Netdraw we wouldn't necessarily recommend that you use this terminology when communicating your analysis, findings and recommendations. In this context, you should consider using jargon free language.

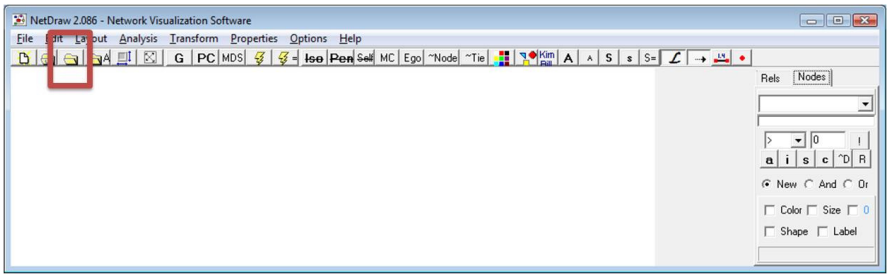
Opening a file

The first thing you need to do is to open the *.vna file. Please note that opening the *.vna file from Windows Explorer will not work. You need to open the file from within Netdraw.

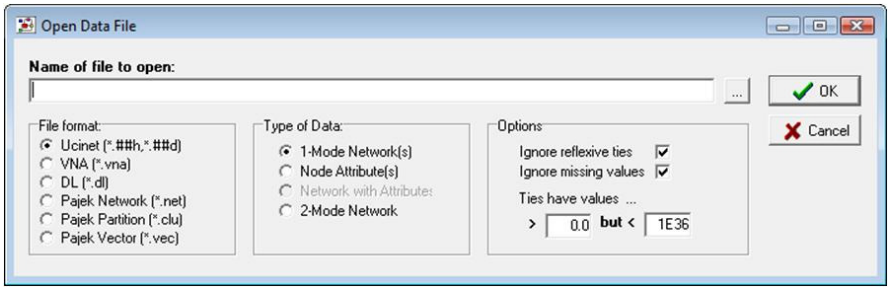
The screenshots below are based on a *.vna demo file which you can download here - http://www2.optimice.com.au/onademo_vna.vna

Netdraw has a text menu at the top as well as some icons which are shortcuts. So, you can either:

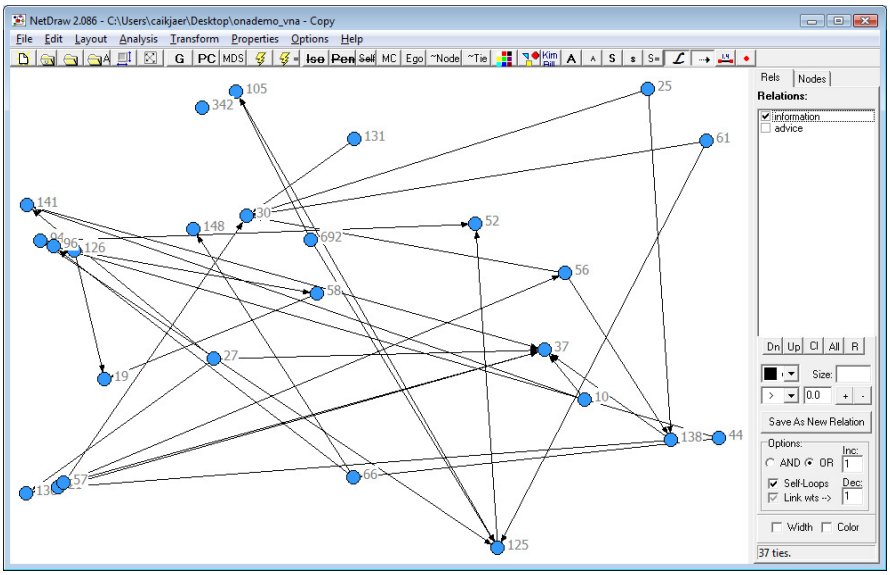
- Click on the folder icon (the one without the 'A'), or
- Click File / Open / Vna text file / Complete



Then you will see this box:



Now you navigate to the *.vna file by clicking on the box with the "…". Once you have found your file, click on the 'OK' button. When the file is loaded, the initial layout of the nodes is completely random and looks pretty messy, probably something like this:

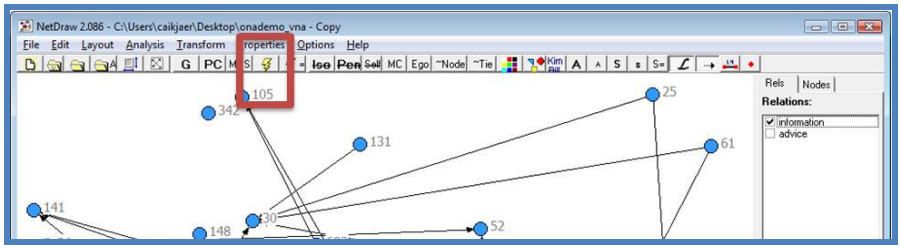


So, the next step is to perform a basic visualization.

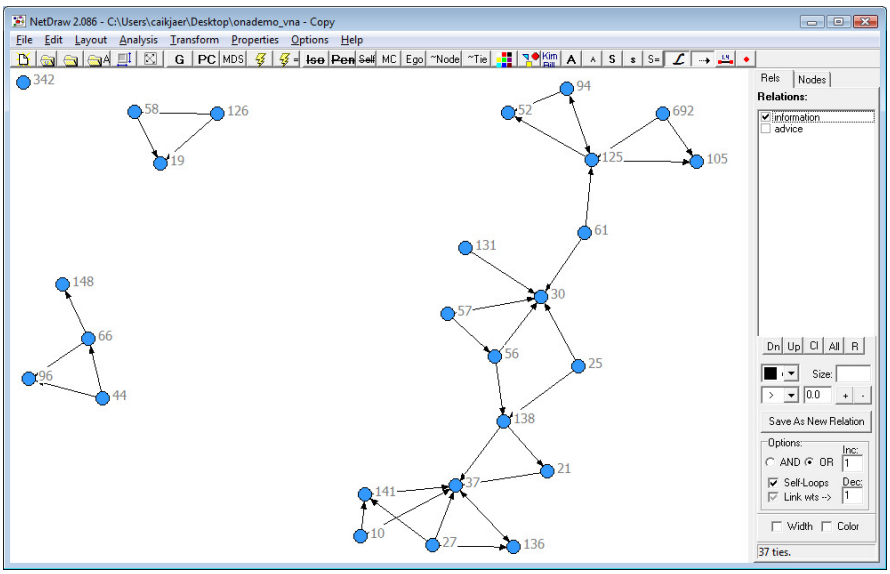
Basic visualization

To make the messy map look more organized:

- Click on the flash icon, or
- Alternatively use the menu and click on "Layout / Graph–Theoretic layout / Spring embedding").



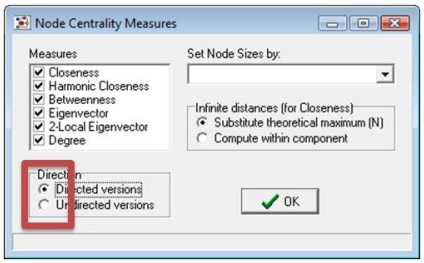
It should now look something like this (color of the nodes might be different):



Sizing nodes

You can get the node size to reflect many things, but we typically get it to reflect the number of indegrees pointing to a node. To do that, firstly we need to get Netdraw to count all the indegrees and outdegrees. You do this by:

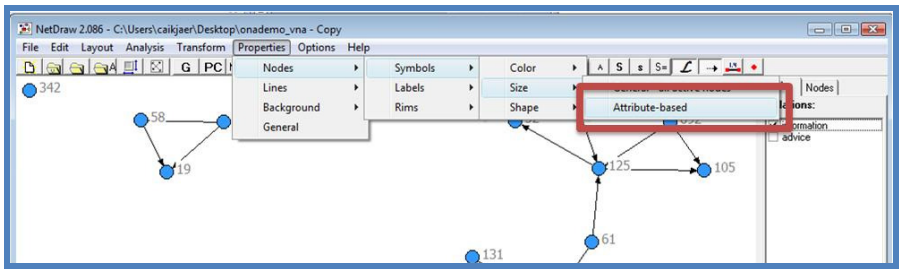
- Click "Analysis / Centrality Measures"
- Make sure that "Directed versions" is selected. Otherwise, Netdraw will count all degrees, and ignore the direction.



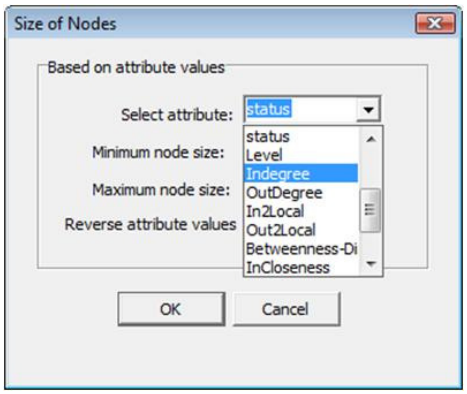
Note: You might get a couple of error messages like "No convergence in iterative eigenvector procedure". We are yet to work out what this actually means, but keep persisting and click on OK. It will not have any effect on the final result.

After you have counted the number of arrows it is time to update the map so the nodes reflect the number of indegrees. Here is how you do it:

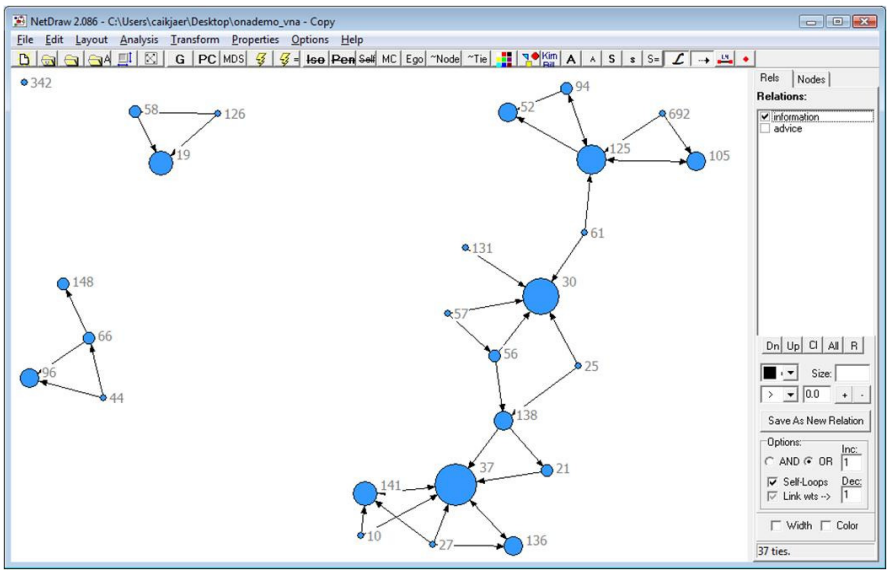
- Click on "Properties / Nodes / Symbols / Size / Attribute based"



- Then select "Indegree" from the dropdown of available attributes:



Then the map will be updated, and should look something like this:



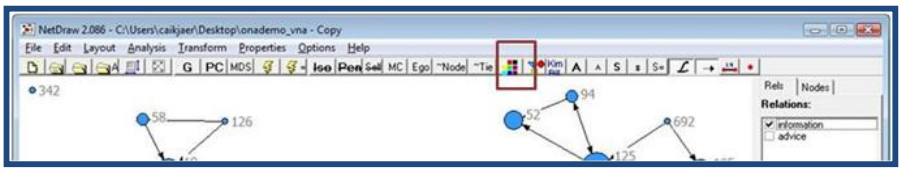
As you can see, it is now much easier to identify the central nodes in the network.

Coloring nodes

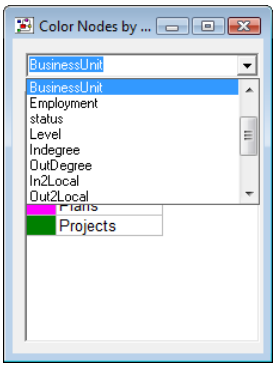
So far we have only been working on general layout and sizing of the nodes. Now let's add some color. Coloring the nodes is a very powerful way to show patterns. In the example below we will color the nodes by the business unit each person belongs to.

To color the nodes:

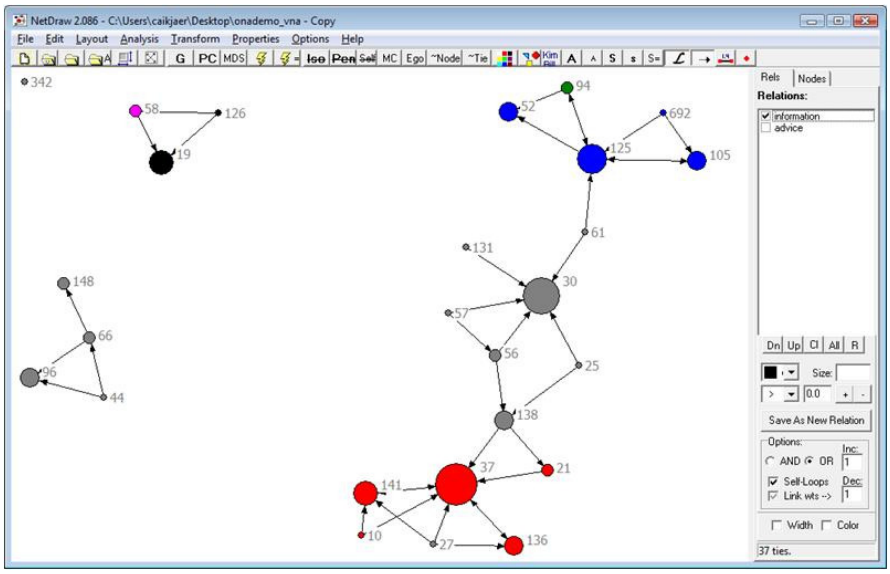
- Click on the icon with the 9 small colored squares, or
- Alternatively, on the menu click "Properties / Nodes / Symbols / Color / Attributes-based"



Then select an attribute from the drop-down (here we have chosen the BusinessUnit attribute):



Once you have chosen an attribute the map will be updated, and should look like this:



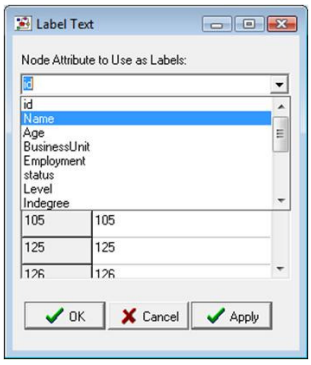
Changing label text and positioning

So far each node has been labeled with an ID number. This is certainly preferred when disclosing maps to a broader audience where names of individuals could be very sensitive. However, when you are developing interventions and are trying to make sense of the maps it is very valuable to see the names.

To change the labels you do the following:

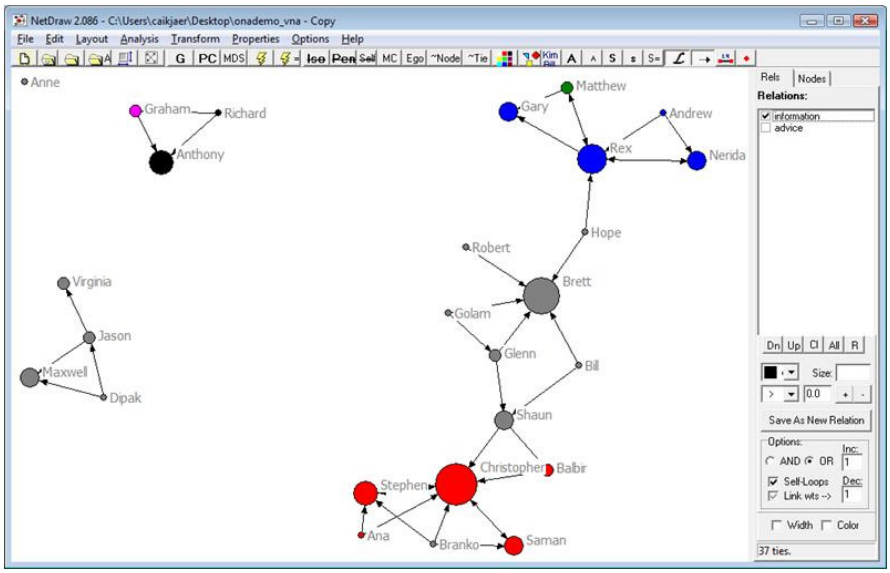
- Click on the icon which says "Kim Bill", or
- Click on "Properties / Nodes / Label / Text".

This box will when appear:



- Now select the relevant attribute from the dropdown list and click apply or OK. The map will be updated with the new labels.

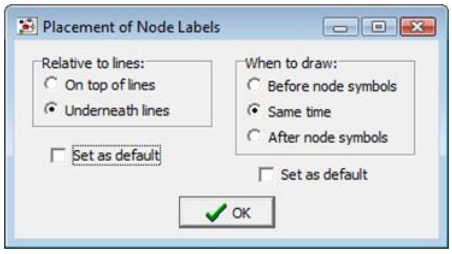
The available attributes will depend on the data you have collected. It should now look like this:



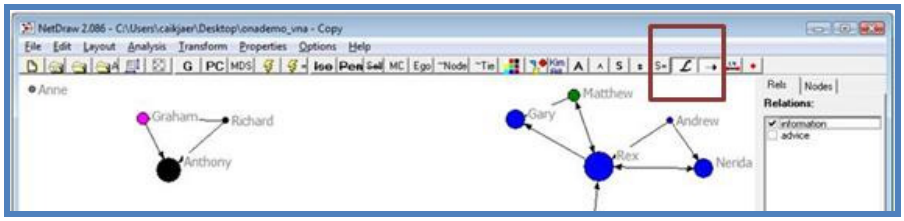
You will notice that Netdraw automatically fills out the label background with white color. This makes it easier to see the label text. However, in some situations you might want to change this so label doesn't actually hide an arrow.

To change the positioning of the label:

- Click "Properties / Nodes / Labels / Placement style", and you can now change the placement of the label to "Underneath lines".



You can also turn the labels entirely on or off by clicking on the "L" icon as shown below:



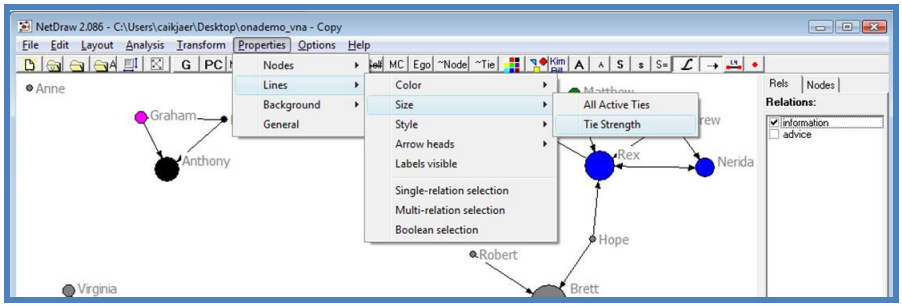
Showing strength of relationships

The strength of a relationship between two nodes can represent a number of things. This all depends on the original question you would have asked when collecting the data. For instance the tie strength could represent **frequency** of interaction or **value** of interaction. A strong tie strength should have a high score and a lower tie strength a lower score.

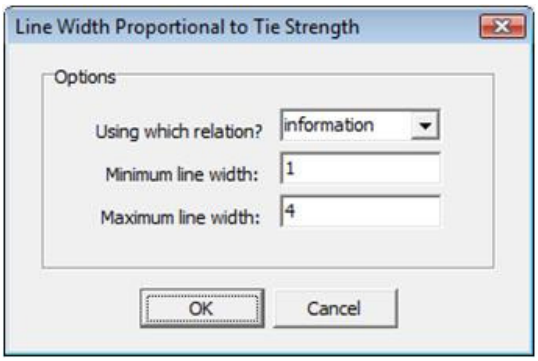
This tie strength can be visualized in Netdraw. We do this by changing the size of the arrows, so a high tie strength would lead to a thick arrow and a weak relationship to a thin arrow.

You can size the arrows according to tie strength by:

- Clicking on "Properties / Lines / Size / Tie strength"

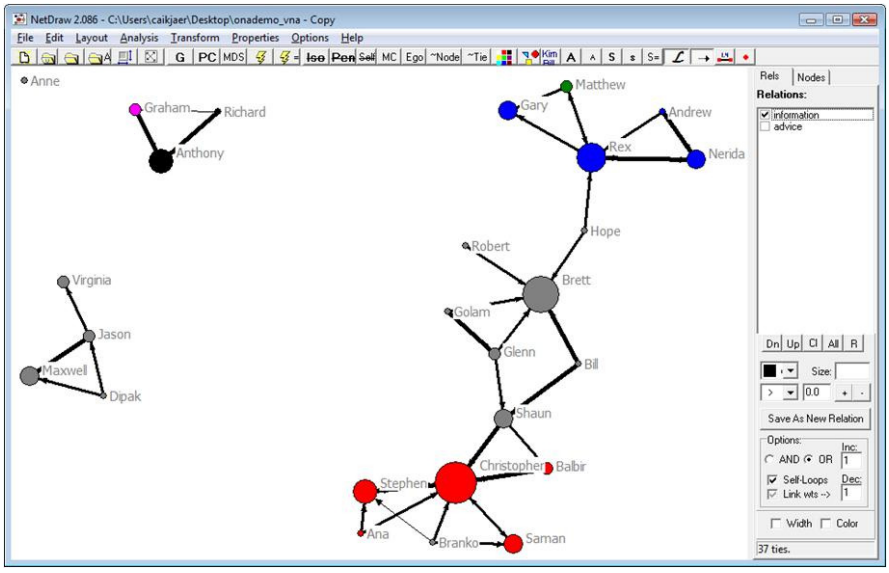


- Then select the particular relation which you want the tie strength to reflect:



Note: The relations you can choose from are limited to the data you have collected. On the screen shown above the options were 'Information' and 'Advice' because the relationship questions were focused on these two areas.

When you click on 'OK' the map should look like this:



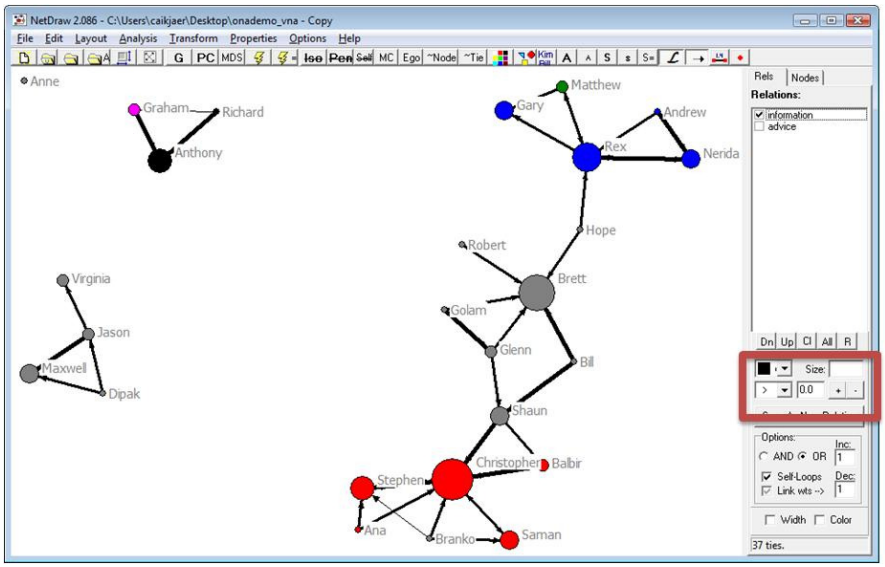
If you want to actually see the tie strength score on the map you can add this (or turn it off) by clicking on the "1.4" icon.

Filtering

You can filter the data in a couple of different ways:

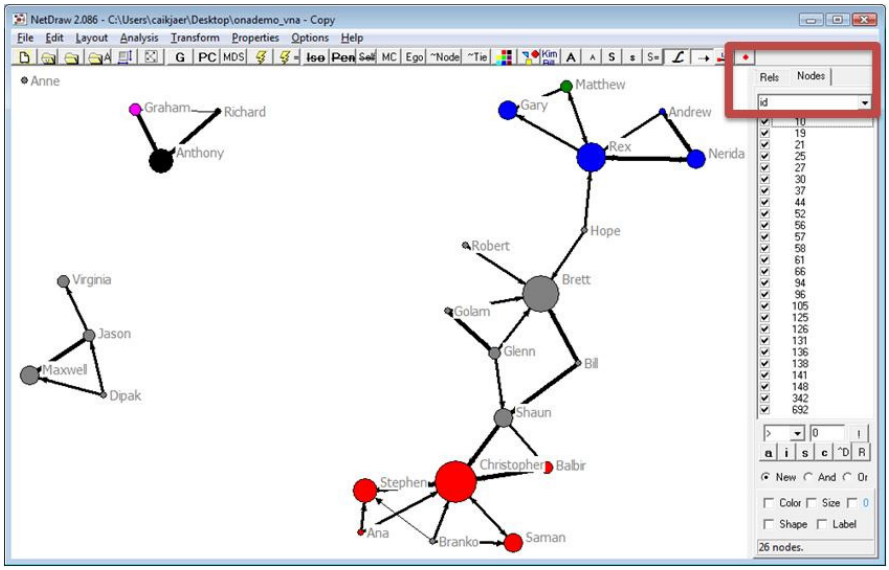
- Filter by the strength of the relationship (tie strength)
- Filter by attributes

To filter by the strength of the relationship you simply increase the tie strength box by clicking on the "+" symbol as shown below:



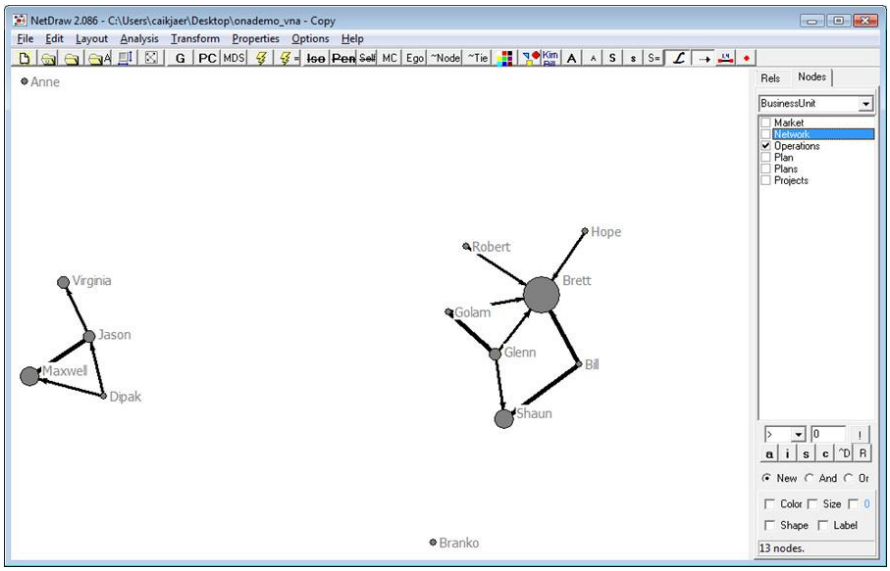
As you increase the number you will see fewer relationships. This is particularly useful if you, for example, want to compare a map of ALL relationships against the most important ones. Click on the "-" to show more relationships. You can also use the ">", "<" or "=" to show the exact tie strength that you are interested in.

The other filtering method revolves around attributes. To get to this you need to click on the 'Nodes' tab as shown below:



The default attribute you will see is the node ID (each node is assigned a unique ID number). However, if you for example are interested in just showing the relationships involving people from one particular business unit then all you need to do is to select this particular attribute from the drop down box, and

then make sure that your chosen business unit is the only one selected, by un-clicking all of the other business units.

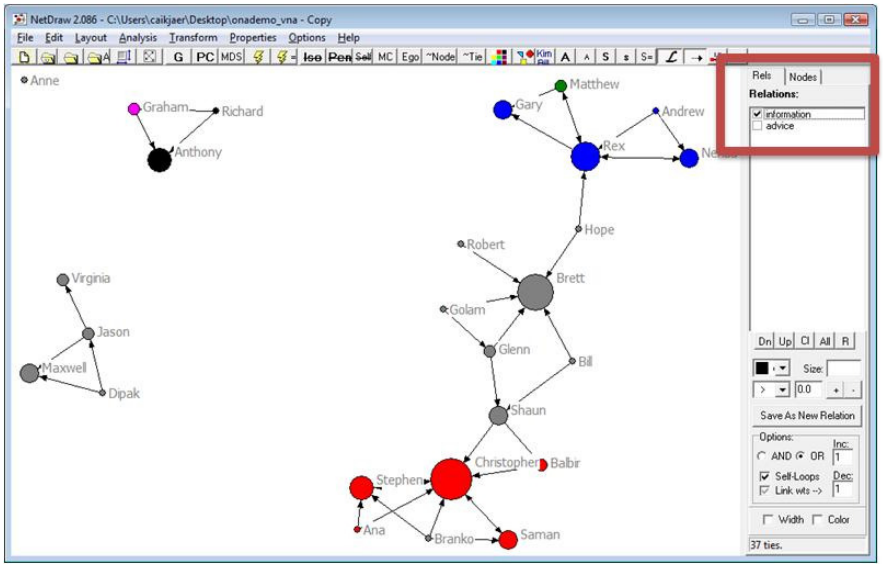


In the map above, we have changed the attribute to 'BusinessUnit', and then clicked only the 'Operations' box. The map will then only include the relationships of the people who belong to this business unit.

Your ability to filter on attributes are depending on the number of attributes you have collected.

Changing networks

You may have noticed on some of the previous screen shots that there were two options under the 'Rels' (Relationships) tab. One called "Information" and one called "Advice". This is because we had captured relationship data for two different networks. The Information network is different from the relationships in the Advice network.



Depending on the data you decide to capture these might have different names. You can choose to display only one network at a time, or combine the networks by ticking all the relationship boxes.

Saving maps as pictures

Once you have a map that you are happy with you probably want to save the file such that it can be pasted in to a document. Netdraw offers 3 different formats:

- Jpeg
- Bitmap
- Metafile

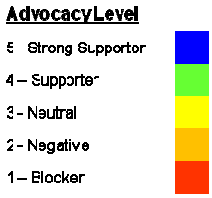
Jpegs you are probably familiar with. They are typically smaller in file size, but the problem is that they can become coarse if you resize manually afterwards. Bitmaps are better in terms of resizing, but also take up a lot of space. Metafiles are probably the best as they scale really well and are also quite small in size.

You save the file by:

- Clicking on "File / Save Diagram As" and then select your chosen file type. Read the section on file naming conventions further below.

Alternatively, you can just press Ctrl-C in Netdraw. It copies the picture, exactly as you have it, to the windows clipboard. Then you can paste it into Powerpoint or Word. However, be careful to record exactly what the map is based on as this will be lost when you copy the map out of Netdraw.

If you have applied any coloring you will also need to recreate the legends for your map. Unfortunately, Netdraw only exports the raw map and no information about it. There isn't a silver bullet here. In our experience it works well to create a small table in Powerpoint (or similar) with two columns and a row for each attribute option. Then manually color the boxes and type in the attribute. For example:



File Naming Convention

Very quickly you will have generated many maps and it is therefore strongly recommended that you use a file naming convention to keep track of what the maps contain. Once a map is saved you have lost the contextual information which was presented in Netdraw, e.g. which relationship, filtering, tie strength etc. So, to keep track of what the maps actually contain we recommend the following:

[Client/Organisation] [Business Unit] [Relationship] [Filter 1] by [Filter 2]

For instance:

"Bigcorp PDG Advice All by Location", or

"Bigcorp PDG Information Critical by Discipline".

About ONA Surveys and Optimice

Optimice provides specialised consulting services to help organisations map and improve business relationships at multiple levels. Optimice identifies relationship patterns between people, organisations or markets, and we have improved the basic techniques to optimise these relationships in a compelling business-focused context.

Our specialized survey tool **ONA Surveys** provides consultants and other practitioners the most effective and user friendly tool available on the market to collect data on business relationships.

Our **Partnership Scorecard™** helps organisations manage the intangible relationship aspects of outsourcing, smart sourcing, alliances, joint-ventures and similar complex business frameworks.

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